### CLAIMS

1. A method for encoding video data, comprising the steps of: dividing an image into blocks, each block including a plurality of pixels, transforming the pixels of a block into transform coefficients (W), and quantizing the transform coefficients (W) in accordance with predefined quantization intervals by mapping each coefficient value to a quantized coefficient value

#### characterized in that

the size of the quantization interval of the lowest coefficient values is adjusted in accordance with a variable dead-zone parameter  $(\Theta)$ , and

the applied dead-zone parameter  $(\Theta)$  is included into the encoded video data for a corresponding modification of the quantization interval of the lowest coefficient values at the decoder side.

 A method according to claim 1, wherein the size of said quantization intervals is adjusted in accordance with a rounding control parameter (f), said rounding control parameter (f) being not part of said encoded video data.

- 3. A method according to claim 1 or 2, wherein said dead-zone parameter (Θ) having a size between a fifth and a half of the interval step size.
- 4. A method according to any of claims 1 to 3, wherein said dead-zone parameter (Θ) having a size of approximately 1/4 of the interval size.
- 5. A method according to any of claims 1 to 4, wherein said dead-zone parameter (Θ) being updated every field or frame of a video sequence.
- 6. A method according to any of claims 1 to 4, wherein said dead-zone parameter (Θ) being updated once per video sequence to be encoded or for every predefined sub-sequences thereof.
- 7. A method according to any of claims 1 to 6, wherein said video data are encoded based on I, P or B type macroblocks and different said dead-zone parameters (Θ) are employed for each macroblock type.
- 8. A method according to any of claims 1 to 7, wherein said method further comprises the steps of:
  - detecting a degree or the presence of film grain within the video data to be encoded, and

adapting the size of said dead-zone parameter in accordance with the detection result.

- 9. A method according to any of claims 1 to 7, wherein said method further comprises the steps of:
  - detecting the presence of film grain within the video data to be encoded, and

enabling the application of said dead-zone parameter only if film grain has been detected.

- 10. A method according to any of claims 1 to 9, wherein said method further comprises the step of predicting the block to be encoded based on a previously encoded block wherein said prediction step comprises a decoding step including an inverse quantization step which applies said dead-zone parameter for the de-quantization.
- 11. An encoder for encoding video data based on image blocks, each block including a plurality of pixels, comprising:
  - a transformer (120) for transforming the pixels of a block into transform coefficients, and
  - a quantizer (120) for quantizing the coefficients in accordance with predefined quantization intervals by mapping each coefficient value to a quantized coefficient value

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### characterized in that

the size of the quantization interval of the lowest coefficient values being adjustable in accordance with a variable dead-zone parameter  $(\Theta)$ , and

the applied dead-zone parameter  $(\Theta)$  being included into the encoded video data for a corresponding modification of the quantization interval of the lowest coefficient values at the decoder side.

- 12. An encoder according to claim 11, wherein the size of said quantization intervals being adjustable in accordance with a rounding control parameter (f), said rounding control parameter (f) being not part of said encoded video data.
- 13. An encoder according to claim 11 or 12, wherein said dead-zone parameter(Θ) having a size between a fifth and a half of the interval size.
- 14. An encoder according to any of claims 11 to 13, wherein said dead-zone parameter  $(\Theta)$  having a size of approximately 1/4 of the interval size.
- 15. An encoder according to any of claims 11 to 14, wherein said dead-zone parameter (Θ) being updated every field or frame of a video sequence.

- 16. An encoder according to any of claims 11 to 14, wherein said dead-zone parameter (Θ) being updated once per video sequence to be encoded or for every predefined sub-sequences thereof.
- 17. An encoder according to any of claims 11 to 16, wherein said video data being encoded based on I, P or B type macroblocks and different said dead-zone parameters (Θ) being employed for each macroblock type.
- 18. An encoder according to any of claims 11 to 17, further comprising:
  - a detector for detecting a degree or the presence of film grain within the video data to be encoded, and
  - setting means for adapting the size of said dead-zone parameter in accordance with the detection result.
- 19. An encoder according to any of claims 11 to 17, further comprising:
  - a detector for detecting the presence of film grain within the video data to be encoded, and
  - enabling means for enabling the application of said dead-zone parameter only if film grain has been detected.
- 20. An encoder according to any of claims 11 to 19, wherein said encoder being a predictive encoder and further comprises a decoder for decoding the

encoded video data, said decoding including a de-quantizer for applying said dead-zone parameter during de-quantization.

- 21. A method for decoding encoded video data on a block basis, said encoded video data include quantized coefficients, comprising the steps of:
  - de-quantizing a block of quantized coefficients of said encoded video data by mapping each quantized coefficient value to a de-quantized coefficient value in accordance with predefined de-quantization intervals, and

transforming a block of de-quantized coefficients into a block of pixels,

## characterized in that

the size of the de-quantization interval of the lowest coefficient values is adjusted in accordance with a variable dead-zone parameter  $(\Theta)$ .

- 22. A method according to claim 21, wherein said dead-zone parameter (Θ) having a size between a fifth and a half of the interval step size.
- 23. A method according to claim 21 or 22, wherein said dead-zone parameter (Θ) having a size of approximately 1/4 of the interval size.
- 24. A method according to any of claims 21 to 23, wherein said dead-zone parameter (Θ) being updated every field or frame of a video sequence.

- 25. A method according to any of claims 21 to 24, wherein said video data being encoded as I, P or B type macroblocks, each macroblock having a different said dead-zone parameter (Θ).
- 26. A method according to any of claims 21 to 25, wherein said dead-zone parameter (Θ) being part of said encoded video data.
- 27. A decoder for decoding encoded video data on a block basis, said encoded video data include quantized coefficients, comprising:

an inverse quantizer (220) for de-quantizing a block of quantized coefficients of said encoded video data by mapping each quantized coefficient value to a de-quantized coefficient value in accordance with predefined de-quantization intervals, and

an inverse transformer (220) for transforming a block of de-quantized coefficients into a block of pixels,

# characterized in that

the size of the de-quantization interval of the lowest coefficient values is adjusted in accordance with a variable dead-zone parameter  $(\Theta)$ .

28. A decoder according to claim 27, wherein said dead-zone parameter ( $\Theta$ ) having a size between a fifth and a half of the interval step size.

- 29. A decoder according to claim 27 or 28, wherein said dead-zone parameter (Θ) having a size of approximately 1/4 of the interval size.
- 30. A decoder according to any of claims 27 to 29, wherein said dead-zone parameter  $(\Theta)$  being updated every field or frame of a video sequence.
- 31. A decoder according to any of claims 27 to 30, wherein said video data being encoded as I, P or B type macroblocks, each macroblock having a different said dead-zone parameter (Θ).
- 32. A decoder according to any of claims 27 to 31, wherein said dead-zone parameter (Θ) being part of said encoded video data.